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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,768	09/12/2003	Howard Scott Forstrom	0918.0152C	5775

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EDELL, SHAPIRO & FINNAN, LLC
1901 RESEARCH BOULEVARD
SUITE 400
ROCKVILLE, MD 20850

EXAMINER	
VON BUHR, MARIA N	
ART UNIT	**PAPER NUMBER**
2125	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/660,768	FORSTROM ET AL.	
	Examiner	Art Unit	
	Maria N. Von Buhr	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Examiner acknowledges receipt of Applicant's response to the previous Office action, received 15 August 2005; which introduces claims 23-25 and amends claims 1-4, 6-12, 14-22. Claims 1-25 are now pending in this application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. In response to Applicant's amendment, the objection to and 35 U.S.C. §112, second paragraph, rejection of the claims are deemed to have been overcome and are, therefore, withdrawn.

4. In response to Applicant's amendments and remarks, concerning the provisional, obviousness-type double patenting rejection of the instant claims, as being unpatentable over claims 1-22 of co-pending Application Serial No. 10/660,764, Examiner notes the following:

a. As presented in the previous Office action, the subject matter claimed in the instant application is fully disclosed in the referenced co-pending application and would be covered by any patent granted on that co-pending application, since the referenced co-pending application and the instant application are claiming common subject matter. The claims of co-pending Application Serial No. 10/660,764 contain every element of the claims of the instant application and as such anticipate the claims of the instant application.

b. Applicant's argument, that "the claims in the present application are directed to generating information for controlling a device or system during an off-line status. The fact that the claims in this application and the '764 application share some common language is not determinative. The manner in which the functions, described by the common language, are used and the goal or result achieved by the variance analysis processes described in the claims of the instant application and the '764 application constitute non-obvious differences" (pages 7-8 of the instant response), is not persuasive. As evidenced by Applicant's instant specification, and that of co-pending application Serial No. 10/660,764, basically the same process used to generate the management profile (exemplified by blocks 200, 240, 250, 260 & 270 of Figure 5A) is used to update such profile (exemplified by blocks 360, 390, 400, 410 & 420 of Figure 5B). Accordingly, the one aspect is not distinguishable and/or distinct from the other. In other words, one aspect is obvious in view of the other.

c. This position is further supported by the evidence of Parent et al. (U.S. Patent Application Publication No. 2003/0097197; cited by Examiner in the previous Office action; now issued as U.S. Patent

No. 6,915,172), which clearly teaches the well-known nature of off-line and on-line optimization. In this regard, Parent et al. teach that "predictive techniques using customized, real-time, online, process monitoring and synchronization data acquisition are used for enhancing process control. A system model is developed using training methods such as design of experiment ("DOE") techniques and continuously adapted to perturbations in the manufacturing environment using real-time process data" (paragraph 12). In other words, Parent et al. support Examiner's assertion that it was well-known in the art, in a same implementation/environment, to both generate a model, using off-line optimization techniques such as DOE, and to subsequently adjust that model, using on-line optimization techniques in response to monitored system parameters. Accordingly, to one having ordinary skill in the art, any teaching of off-line optimization would have been obviously applicable to on-line optimization, and vice-versa.

d. Therefore, claims 1-25 now stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over now pending claims 1-13 and 15-22 of co-pending Application Serial No. 10/660,764, alone or in the alternative, in view of Parent et al. (U.S. Patent Application Publication No. 2003/0097197; now issued as U.S. Patent No. 6,915,172).

5. In response to Applicant's amendment and remarks, concerning the 35 U.S.C. §102(a) rejection of claims 9 and 12-21, as being clearly anticipated by Parent et al. (U.S. Patent Application Publication No. 2003/0097197; now issued as U.S. Patent No. 6,915,172), Examiner notes the following:

a. As presented in the previous Office action, Parent et al. disclose a "method for enhancing process control including initiating a manufacturing process to create a product. The initiating includes setting a control on a machine in response to an initial system model. The manufacturing process is tuned in response to the initial system model. The tuning includes running the machine in response to the initial system model, monitoring a primary output parameter of the product and performing an adaptation process while the manufacturing machine is running. The adaptation process includes adjusting the control on the machine, updating the initial system model to define an updated system model in response to adjusting the control and running said machine in response to said updated system model" (the abstract). See at least, Fig. 1, with associated text; and paragraphs 4, 5, 12, 13, 24 and 27; of Publication No. '197.

b. Applicant argues that Parent et al. do not teach or suggest "performing an off-line optimization analysis including optimization experiments to optimize a quality of service measure and an operating condition of a device or system" (at page 9 of the instant response). This argument is not persuasive.

c. Firstly, Applicant's assertion that Parent et al. do not teach or suggest "performing an off-line optimization analysis including optimization experiments" is directly contradicted by the teachings of

Parent et al. that "in an exemplary embodiment, predictive techniques using customized, real-time, online, process monitoring and synchronization data acquisition are used for enhancing process control. A system model is developed using training methods such as design of experiment ("DOE") techniques and continuously adapted to perturbations in the manufacturing environment using real-time process data" (paragraph 12; emphasis added). Parent et al. further teach that "the system model 102 specifies the values for manufacturing machine 106 control settings. In an exemplary embodiment, the system model 102 includes one or more multi-variable, transfer functions. The transfer functions may be created using DOE techniques or any other model training methods. Any training technique known in the art can be used to create the transfer functions that predict the quality of the finished product 110 based on fixed and variable input values" (paragraph 14), "an initial system model may be generated using training methods (such as DOE) in which x's and y's are adjusted and measured to derive the system parameters" (paragraph 16), and "FIG. 2 depicts an exemplary overall process flow for optimizing process control using a PPO tool. The process begins at step 202 when the system model for the production process 104 is established using existing techniques. Next, at step 204, the manufacturing process is started" (paragraph 28), thereby inherently providing for "off-line" optimization analysis to generate the profile before manufacturing processes begin (i.e.; before on-line operation), as instantly claimed.

d. Secondly, Applicant's assertion that Parent et al. do not teach or suggest optimizing "a quality of service measure and an operating condition of a device or system" is directly contradicted by the teachings of Parent et al. that (1) "the database 114 may include information regarding, for example, production performance, process set points, quality reports and job tracking ... data/information such as inline inspection quality output parameter information (e.g., tilt, spacer layer, birefringence, reflectivity, and the like), data attributed to a production machine's operating state/performance (e.g., actual set points, desired set points and yield-loss characterization), manufacturing data regarding total production (e.g., yield, cycle-time, downtime characterization, job-tracking, and the like), and off-line quality information/follow-up testing and data (e.g., electrical testing, environmental testing trends, visual inspection, and the like)" (paragraph 24), in which the "data attributed to a production machine's operating state/performance" and/or "manufacturing data regarding total production" of Parent et al. are deemed to be analogous to the instantly claimed "operating condition," and (2) "in an exemplary embodiment, predictive techniques using customized, real-time, online, process monitoring ... are used for enhancing process control. A system model is ... continuously adapted to perturbations in the manufacturing environment using real-time process data ... The system model is adjusted if an output parameter that affects final product yield, referred to as a primary output parameter, is outside of a selected range of values" (paragraph 12), in which the "primary output parameter" of Parent et al. is deemed to be analogous to the instantly claimed "quality of service

measure" (further defined in paragraphs 21 and 24), wherein the system of Parent et al. is specifically characterized as a "process control system" (see the abstract; see also paragraphs 2-4, which discuss the purpose of process control as being for ensuring quality of product).

e. Applicant further argues that Parent et al. do not teach or suggest "performing a variance analysis on results from the optimization experiments and generating, from results of the optimization experiments, first data relating each of the plurality of control factors to the quality of service measure and second data relating each of the plurality of control factors to the operating condition of the device" (at page 9 of the instant response). Parent ... describe or suggest monitoring a plurality of parameters, but each parameter in isolation, whereas the present invention involves considering how all parameters relate to each other (not each in isolation) and then deciding how to adjust the system to obtain optimal performance" (at page 9 of the instant response). This argument is only partially persuasive.

f. Particularly, Examiner disagrees with Applicant's assertion that the system of Parent et al. only handles parameters in isolation, because Parent et al. specifically teach that "FIG. 3 depicts an exemplary adaptation process flow for enhancing process control. The adaptation process is started at step 302, when it is called from step 214 in FIG. 2 in response to a primary output parameter being outside a selected value range. At step 304 the manufacturing controls are altered, and at step 306 the system model is updated to reflect the input-to-output relationship. Input parameters, x's, are altered and output parameters, y's, are monitored. The x's and y's are used to update the system parameters (a's) in one or more system model transfer functions, the system parameters defining relationships between x's and the output parameter Y. The system model may be updated by modifying system parameters (a's) or expanding the form of the function f.sub.i (e.g., adding additional terms to function)" (paragraph 31; emphasis added), and "FIG. 4 is an exemplary dashboard screen for monitoring secondary parameters. This screen is updated with an operator alert message when, at step 216 in FIG. 2, a primary or secondary parameter is determined to be outside of a selected range of values for the parameter. The dashboard screen is designed to alert an operator and to recommend a corrective action in order to prevent future degradation and lost production ... This can show an operator the overall status of the manufacturing line and the quality of the final product being produced. In the bottom half of the screen, secondary parameters are grouped together and tracked" (paragraph 33; emphasis added). However, Examiner does agree with Applicant's assertion that Parent et al. do not teach the use of variance analysis.

g. In this regard, however, Boysworth (U.S. Patent No. 6,961,677; newly cited) teaches "A method and apparatus for performing continuous variance analysis (CVA) to characterize a data set. Data set values may be associated with any source, including measurements of a received signal and/or measurements

of natural and/or man-made phenomena. CVA generates an output matrix that contains a measure of variation for a plurality of ranges (or windows) of data elements within a data set positioned at known locations within the data set. CVA output can be interpreted visually by a technician and/or using automatic numerical analysis. CVA is compatible with any apparatus/approach that uses numerical analysis to generate a predicted model based upon stored library models and/or linear/nonlinear components. CVA is compatible with any programming language and can be readily added to new and/or existing apparatus to compliment existing capabilities. CVA is less complex than conventional techniques, and requires less computer processing capacity, yet results in more readily interpretable results" (the abstract). In other words, Boysworth teaches that it was well known in the art, to utilize variance analysis to analyze measured information. It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such analysis in the system of Parent et al., because Boysworth teaches that such analysis "is less complex than conventional techniques, and requires less computer processing capacity, yet results in more readily interpretable results" (as noted above).

h. Applicant further argues that Parent et al. do not teach or suggest "generating management profile information relating the quality of service measure and the operating conditions of the device based on results of the variance analysis, the first data and the second data" (spanning pages 9-10 of the instant response). This argument is not persuasive, similarly as presented above in paragraphs 5c-g.

i. Accordingly, claims 9, 12-21 and 23-25 now stand rejected under 35 U.S.C. §103(a), as being unpatentable over Parent et al. (U.S. Patent Application Publication No. 2003/0097197; now issued as U.S. Patent No. 6,915,172) in view of Boysworth (U.S. Patent No. 6,961,677).

6. In response to Applicant's amendment and remarks, concerning the 35 U.S.C. §103(a) rejection of claims 10, 11 and 12 (in the alternative), as being unpatentable over Parent et al. (U.S. Patent Application Publication No. 2003/0097197), as applied above to claim 9, further in view of Applicant's admitted prior art, at pages 17-18 of the instant specification, Examiner notes the following:

a. As presented in the previous Office action, Applicant admits that Taguchi experiments, fractional factorial experiments, full factorial experiments, DOE experiments, Orthogonal Array experiments, and Latin Square Design experiments are well known types of optimization techniques in the art. It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such techniques in the system of Parent et al., since Parent et al. already disclose use of DOE experiments (paragraph 12), and it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

b. Applicant provides no arguments concerning this rejection. Accordingly, in view of the newly presented rejection above, claims 10, 11, 12 (in the alternative) and 25 (in the alternative) now stand rejected under 35 U.S.C. §103(a), as being unpatentable over Parent et al. (U.S. Patent Application Publication No. 2003/0097197) in view of Boysworth (U.S. Patent No. 6,961,677), as applied above to claim 9, further in view of Applicant's admitted prior art, at pages 17-18 of the instant specification.

7. In response to Applicant's amendment and remarks, the 35 U.S.C. §102(b) rejection of claims 1, 5-9 and 13-22, as being clearly anticipated by Atkinson (U.S. Patent No. 5,991,883), and the 35 U.S.C. §103(a) rejection of claims 2-4 and 10-12, as being unpatentable over Atkinson (U.S. Patent No. 5,991,883) in view of Applicant's admitted prior art at pages 17-18 of the instant specification, are deemed to have been overcome and are, therefore, withdrawn.

8. Claims 1, 4-8 and 22 are now rejected under 35 U.S.C. §103(a), as being unpatentable over Parent et al. (U.S. Patent Application Publication No. 2003/0097197; now issued as U.S. Patent No. 6,915,172) in view of Boysworth (U.S. Patent No. 6,961,677), similarly as applied above to claims 9 and 12-21, further in view of Atkinson (U.S. Patent No. 5,991,883; previously cited). Although Parent et al. disclose generating a manufacturing model in response to operating conditions of a manufacturing system, Parent et al. do not specify that those operating conditions are necessarily power consumption related. In this regard, Atkinson teaches the well-known monitoring of power consumption, for the purpose of adjusting system operation responsive thereto. As noted in the previous Office action, Atkinson discloses a "power conservation method for a portable computer with LCD display," including changing modes of operation (analogous to the instantly claimed updating of a management profile), based upon stored correlations between operating parameters and desired performance, and monitored conditions and operating parameters of the computer system. See at least, the abstract; Fig. 1, with associated text; col. 2, line 55 - col. 4, line 17; col. 4, line 58 - col. 5, line 7; col. 7, lines 58-64; col. 8, lines 12-33. It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to include such power consumption information in the operating parameters of Parent et al., because Atkinson discloses a resultant increased efficiency of system power consumption.

9. Claims 2, 3 and 4 (in the alternative) are now rejected under 35 U.S.C. §103(a) as being unpatentable over Parent et al. (U.S. Patent Application Publication No. 2003/0097197) in view of Boysworth (U.S. Patent No. 6,961,677), further in view of Atkinson (U.S. Patent No. 5,991,883), as applied above to claim 1, further in view of Applicant's admitted prior art, at pages 17-18 of the instant specification, similarly as presented above with regard to claims 10, 11 and 12 (in the alternative).

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Applicant is advised to carefully review the cited art, as evidence of the state of the art, in preparation for responding to this Office action.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR §1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR §1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria N. Von Buhr whose telephone number is 571-272-3755. The examiner can normally be reached on M-F (9am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maria N. Von Buhr
Primary Patent Examiner
Art Unit 2125

MNVB
10/31/05